

Comparison of point-of-care tests, Sonoclot and PFA to assess coagulation: healthy volunteers vs normal pregnant patients

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Background and Goal of Study: Classical laboratory tests evaluate individual components of coagulation and require 45-60 min for results to be available. SONOCLOT is a point-of-care (POC) bedside test that allows rapid evaluation of the overall coagulation system. POC coagulation testing might provide essential information for management of the high risk obstetric patient. However reference values during pregnancy are still poorly defined. We measured SONOCLOT and PFA (Platelet function analyser) variables in normal at term pregnant women and compared these to the values of non-pregnant female volunteers in order to assess how pregnancy alters POC coagulation variables.

Materials and Methods: Citrated blood samples (3.2%, 109 mM) were collected from 20 young female non-pregnant volunteers and 12 at term pregnant women. In addition to hematocrit (Hct), and platelet count, Sonoclot, and PFA tests were performed. Data between normal volunteers and pregnant women were compared using the Mann-Whitney U test.

Results and Discussion: Hct and platelet count were lower in pregnant women as compared to non-pregnant volunteers (32.9% (31.9-33.8) vs 36.6% (35.6-37.5); $p < 0.001$ and 154.000/ μl (130.000-178.000) vs 222.000/ μl (195.000-248.000); $p = 0.001$).

In pregnant women, Initiation of clotting as measured by gbACT+ (glass bead activated clotting time) was faster (145 s (142-148) vs 162 s (154-171); $p = 0.013$), clot rate (CR) was higher (42 units/min (40-45) vs 28 units/min (26-30); $p < 0.001$) and time to peak (TTP) was shorter (7.2 min (2.2-8.3) vs 9.9 min (8.5-11.3); $p = 0.019$) than in non pregnant women. In contrast, Platelet function (PF) was decreased 2.3 (1.8-2.8) vs 3.1 (2.6-3.6); $p = 0.024$ in pregnant women, while maximum amplitude (MA) did not differ between groups: 77 units (73-81) vs 73 units (69-77) ($p = 0.209$).

PFA showed shorter closure times in pregnant women for collagen/epinephrine (106 s (98-114) vs 130 s (119-142); $p = 0.009$) but not for collagen/ADP stimulated platelets (83 s (75-90) vs. 99 s (89-108); $p = 0.133$).

Conclusion: This study provides reference values for Sonoclot and PFA parameters during normal pregnancy. Values are different from non-pregnant women and reflect the hypercoagulable state during pregnancy. These values can be used as reference values when assessing coagulation status with POC coagulation testing in patients with (pre)eclampsia requesting locoregional techniques for analgesia.